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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,248	04/22/2004	Hiroyuki Nakashima	826.1945	8194

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER
LIEW, ALEX KOK SOON

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/829,248	NAKASHIMA ET AL.
	Examiner	Art Unit	
	Alex Liew	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

The amendment made on 11/26/07 is entered and made of record.

Response to Applicant's Arguments

1.   On page 8 of the reply, the applicant argued Brady does not disclose all the

limitations claimed in claim 1. The examiner disagrees. Brady discloses extracting as a

partial image a part of a high-resolution image captured by the high resolution camera

(see figure 1, an image is taken on enclosed rectangular area of a scene is read as the

high resolution image; column 7, lines 33 to 41, candidate regions such as regions

which a vehicle is detect is read as the partial image); and generating a low-resolution

image having lower resolution from the partial image (see column 12, lines 35 to 41,

sub-sampling is perform to reduce the resolution); detecting the mobile object using the

low-resolution image (see column 11, lines 14 to 30, track or target points are current

edge points of a vehicle being track; tracking is read on detecting). Brady reads on

performing a recognizing process for the detected mobile object using a high-resolution

image (see column 12, lines 43 to 63, matching is done using difference image between

reference image and vehicle image in the target region); and outputting a recognition

result of the detected mobile object (see column 12, lines 34 to 46, once detected

identification of a car or truck is done; column 10, lines 5 to 9).

2.   On pages 7 and 8, the applicant argues the placement of the tent function

suggests the failure to disclose the limitations of claim 1. The examiner disagrees,

because the purpose of placing tent function onto the region of interest is to convert the

features in the region of interest into a vector.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   Claim 12 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claim 12 recites "A propagation signal for

propagating a program" is drawn to non-functional descriptive material. MPEP

2106.IV.B.1(a) (Nonfunctional Descriptive Material) states:

> "Descriptive material that cannot exhibit any functional interrelationship with the
> way in which computing processes are performed does not constitute a statutory
> process, machine, manufacture or composition of matter and should be rejected under
> 35 U.S.C. 101."

> "Where certain types of descriptive material, such as music, art, photographs and
> mere arrangements or compilations of facts or data, are merely stored so as to be read
> or outputted by a computer without creating any functional interrelationship, either as
> part of the stored data or as part of the computing process performed by the computer,
> then such descriptive material alone does not impart functionality either to the data as
> so structured, or to the computer."

2.   Claim 11 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claim 11 is drawn to functional descriptive

material NOT claimed as residing on a computer readable medium.   MPEP

2106.IV.B.1(a) (Functional Descriptive Material) states:

> "Data structures not claimed as embodied in a computer-readable medium are
> descriptive material per se and are not statutory because they are not capable of
> causing functional change in the computer."

"Such claimed data structures do not define any structural or functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized."

Claim 11, while defining a recording medium recording a program, does not define a "computer-readable medium" and is thus non-statutory for that reasons. A recording medium recording a program can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" in order to make the claim statutory.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1 – 3, 5, 9 and 10 – 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Brady (US pat no 5,761,326).

With regards to claim 1, Brady discloses extracting as a partial image a part of a high-resolution image captured by the high resolution camera (see figure 1, an image is taken on enclosed rectangular area of a scene is read as the high resolution image; column 7, lines 33 to 41, candidate regions such as regions which a vehicle is detect is

read as the partial image); and generating a low-resolution image having lower

resolution from the partial image (see column 12, lines 35 to 41, sub-sampling is

perform to reduce the resolution); detecting the mobile object using the low-resolution

image (see column 11, lines 14 to 30, track or target points are current edge points of a

vehicle being track; tracking is read on detecting). Brady reads on performing a

recognizing process for the detected mobile object using a high-resolution image (see

column 12, lines 43 to 63, matching is done using difference image between reference

image and vehicle image in the target region); and outputting a recognition result of the

detected mobile object (see column 12, lines 34 to 46, once detected identification of a

car or truck is done; column 10, lines 5 to 9).

With regards to claim 2, Brady reads on an apparatus according to claim 1, wherein

said extraction device extracts a plurality of partial images using a plurality of windows

provided and arranged at an upper end, a lower end, a left end, or a right end of the

high resolution image captured by high resolution camera (see figure 7B – there are six

different images arranged in the larger window, 208), and generates a low-resolution

image by arranging the plurality of partial images in one direction (see column 12 lines

34 – 60).

With regards to claim 3, Brady reads on an apparatus according to claim 1, wherein

said extraction device extracts a plurality of partial images from the high resolution

image captured by the high-resolution camera (see figure 7B – there are seven partial

image within 208), generates a low-resolution image by combining the plurality of partial

image (see column 12 lines 37 – 40 – a 2 X 2 kernel is use to reduce the resolution of

the image in the region of interest), and generates a video picture from low-resolution

images consecutive in a time series, and said detection device detects the mobile object

using the generated video picture (see figure 2 – 2 – a video consists of series of

sequential images put together in series).

With regards to claim 5, Brady discloses an apparatus according to claim 1, wherein

said extraction device extracts the partial image using a window provided at a closest

position to a running direction of the mobile object which enters the high-resolution

image captured by the high-resolution camera (see figure 11 – the vehicle enters the

image frame at the bottom of the image with a window place around the vehicle).

With regards to claim 9, Brady discloses an apparatus according to claim 1, further

comprising a storage device storing information about a plurality of detection windows in

the high-resolution image captured by the high-resolution camera, and information

about a recognition window associated with each detection window, wherein said

extraction device extracts a plurality of partial images using the plurality of detection

windows, and generates a low-resolution image by combining the plurality of partial

images, and when the mobile object is detected from a partial image in the low-

resolution image, said recognition device extracts a recognition image from the high-

resolution image transmitted from the high-resolution camera using a recognition

window corresponding to a detection window used in extracting a partial image in which

the mobile object is detected (see column 4 lines 7 – 9 – the data shown in figures 5, 7B

and 11 is store in a storage device).

With regards to claims 10 – 14, see the rationale and rejection for claim 1.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady

('326) as applied to claim 1 further in view of Benton (US pat no 5,479,526).

With regards to claim 4, Brady discloses all the limitations discussed in claim 1 including

generating low-resolution image, but does not disclose generating a video picture by

alternately inserting the two partial images as respective images. Benton discloses

generating a video picture by alternately inserting the two partial images as respective

images (see column 3 lines 27 – 40). One skilled in the art would include generating a

video picture by alternately inserting the two partial images as respective images

because to select the better image of the two to be inserted into the image, which

produce the best possible image or frame.

3.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady

('326) as applied to claim 1 further in view of Piccinelli (US pat no 6,829,373).

With regards to claim 6, Brady discloses all the limitations discussed in claim 1 including

generating low resolution image, but does not disclose changing a size of the window

depending on a form the image. Piccinelli discloses changing a size of the window

depending on a form the image (see column 7 lines 16 – 23). One skilled in the art

would include changing a size of the window depending on a form the image because

the window size needs to change in order to accompany the size of a smaller car, which

makes the window smaller or accompany the size of a large truck, which needs to

increase the size of the window; if the window is smaller than the object of interest then

there will be some error identification.

4.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady

('326) as applied to claim 1 further in view Kakinami (US pat no 6,813,371).

With regards to claim 7, Brady discloses all the limitations discussed in claim 1 including

generating low-resolution image, but does not disclose changing an angle of the window

depending on a traveling direction of the mobile object. Kakinami discloses changing an

angle of the window depending on a traveling direction of the mobile object (see column

9 lines 45 – 50 – TB is perpendicular to the road shown in the figure 6a). One skilled in

the art would include step of changing an angle of the window depending on a traveling

direction of the mobile object because if the object in the image is rotated by certain

degree with respect to the images stored in a database, where this database contains

image templates of different vehicle, might result in some error in the recognition

process; aligning, in position and angle, the current vehicle object with the template

image will increase recognition accuracy.

5.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady

('326) as applied to claim 1 further in view Hu (US pat no 5,867,584).

With regards to claim 8, Brady discloses all the limitations discussed in claim 1 including

generating low-resolution image and extracting a portion showing movement from the

high-resolution image (see figure 11 – 130), but does not discloses selecting an

optimum window from the plurality of windows. Hu discloses selecting an optimum

window from the plurality of windows (see column 2 lines 59 – 67). One skilled in the art

would include step of selecting an optimum window from the plurality of windows

because to make sure the window fit around the object in the image without any

breaches, to ensure best possible recognition result.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Liew whose telephone number is (571)272-8623. The examiner can normally be reached on 9:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alex Liew
AU2624
1/24/08

MATTHEW C. BELL.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600